

The Combustion Gas Analyser

A combustion gas analyser is an instrument used for measuring the various components of the combustion products from a burner unit. These will include oxygen, carbon monoxide and naturally nitrogen. All three of these are, strangely enough, basically unwanted constituents of the gas and are there for different reasons. The typical combustion gas analyser will measure oxygen, carbon monoxide and the gas inlet and outlet temperatures. Carbon dioxide is generally calculated from the oxygen content.

The oxygen is present because no combustion process is perfect and it is impossible to mix fuel and air so finely that no wastage will occur. A little extra oxygen will always be needed to ensure that all the fuel is burned. Nitrogen is present since it is part of the air that the burner uses. It is not necessary to the combustion process, but it cannot be avoided and the heating of the nitrogen presents one of the major sources of losses. Carbon monoxide is a product of imperfect combustion. It can never be completely avoided. The trick is to balance the excess air that is needed against the level of carbon monoxide that is acceptable.

The combustion gas analyser allows the operator to adjust the airflow for the optimum use of the fuel supplied, without producing too much of the toxic carbon monoxide. Without the combustion gas analyser maintenance personnel will only be able to use their own relative idea of the correct air/fuel mixture and will have no absolute reference should there be complaints of pollution from the burner.

A combustion gas analyser allows the equipment to be adjusted for compliance with the appropriate standards legally applicable. In fact, EPA compliance testing is one of the major uses for the combustion gas analyser.

These instruments go under many names, including flue gas analyser (or flue gas analyzer if you prefer!), stack analyser or simply gas analyser.